

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant:	Andrew B. Hastings	Examiner:	Shane M. Thomas
Serial No.:	10/643,580	Group Art Unit:	2186
Filed:	August 18, 2003	Docket No.:	1376.721US1
Title:	MAPPING AN ARBITRARY NUMBER OF CONTIGUOUS MEMORY PAGES AT AN ARBITRARY ALIGNMENT		

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**AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

This responds to the Office Action mailed on January 9, 2006. Please amend the above-identified patent application as follows.

This response is accompanied by a Petition, as well as the appropriate fee, to obtain a two-month extension of the period for responding to the Office Action, thereby moving the deadline for response from April 9, 2006 to June 9, 2006.

### **IN THE DRAWINGS**

Although applicant believes a flowchart does little to aid in the understanding of what was already described in the method claims, such a flowchart is supplied herewith.

Enclosed is a New Sheet showing the newly added Figure 5, which is presently being formalized and will be replaced with a formal drawing upon allowance of the pending claims. Supporting amendment has been made to the Brief Description of Drawings and Specification, but new matter not previously disclosed in the claims or the specification has not been added.

### **IN THE SPECIFICATION**

**Please add the following paragraph to the Brief Description of Drawings at page 4, line 4:**

Figure 5 is a flowchart of a method of mapping contiguous virtual memory pages into physical memory, consistent with an example embodiment of the invention.

**Please amend the paragraph beginning on page 7, at line 10, as follows:**

Searching the free bits is performed in some embodiments of the invention by first searching each word with a ~~with a~~ population count instruction. Such an instruction evaluates the bits in a word, and returns either the number of bits that are ones, or the number of bits that are zeros. Either result will indicate the number of free bits in the word, and suggest whether a word is certain to represent enough free pages to fulfill the mapping request, certain to not represent enough free pages to fulfill the request, or uncertain. If the population count indicates that 62 of the 64 represented pages are not free, a four-page contiguous mapping to those pages can be determined to be not possible. Similarly, if only a few of the 64 represented pages are not free, a four-page contiguous mapping can be determined to be possible. But, if half the 64 bits are free, it is not known how the free pages are distributed among the sequential pages, and it cannot be determined with certainty whether there is a contiguous block of four free pages in the 64 pages represented without further processing of the free bits.

**Please insert the following paragraph at p. 9, line 9:**

Figure 5 is a flowchart, showing a method of practicing one example embodiment of the invention. At 501, a memory transfer from virtual memory into physical memory is initiated, such as by a software application using data stored in the virtual memory space. The number of contiguous virtual memory pages to be loaded into physical memory is determined at 502, and

the alignment of the contiguous virtual memory pages is determined at 503. A data structure comprising free bit information for the physical memory pages is searched at 504 to locate free space in physical memory having a sufficient number of contiguous free pages and the desired alignment. When sufficient free space is found or made available in physical memory, such as by unloading some pages to make room for the newly requested memory pages, the contiguous virtual memory pages are mapped into contiguous physical memory using a single mapping at 505.